

580402S BIOMEDICAL IMAGING METHODS (1 - 4 ECTS)

Spring 2015

Lectures (16 h):

April 8, 2015

12:15 – 13:00

Seppo Vainio: *Introduction to biomedical imaging.*

13:15 – 15:00

Renata Prunskaitė-Hyyryläinen: *Basics of optical projection tomography (OPT) and its applications for ex vivo research.*

15:15 – 15:35

Antti Salo: *Basics and applications of in vivo optical imaging technique.*

15:35 – 16:15

Veli-Pekka Ronkainen: *Intravital multiphoton microscopy and Light sheet microscopy.*

April 10, 2015

13:15 – 15:00

N.N.: *Basics of magnetic resonance imaging (MRI) and applications for ex vivo and in vivo research.*

April 13, 2015

08:15 – 10:00

Simo Saarakkala: *Basics of FTIR and Raman spectroscopy and their applications for ex vivo research.*

10:15 – 11:00

Simo Saarakkala: *Polarized light microscopy.*

April 14, 2015

08:15 – 09:00

Simo Saarakkala: *Basics of computed tomography (CT).*

09:15 – 11:00

Sakari Karhula: *Applications of micro-CT imaging for ex vivo and in vivo research.*

April 15, 2015

12:15 – 14:00

Matti Kinnunen: *Optical coherence tomography (OCT).*

14:15 – 15:00

Zoltan Szabo: *Ultrasound imaging of small animals.*

15:15 – 16:00

Raija Sormunen ja Ilkka Miinalainen: *Electron microscopy.*

Demonstrations (8 h):

April 20, 2015

09:15 – 11:00

Demonstration I (4 groups)

April 21, 2015

09:15 – 11:00

Demonstration II (4 groups)

April 22, 2015

09:15 – 11:00

Demonstration III (4 groups)

April 23, 2015

12:15 – 14:00

Demonstration IV (4 groups)

Zoltan Szabo:

Ultrasound imaging of small animals *in vivo*

Renata Prunskaitė-H.

Optical projection tomography *ex vivo*

Sakari Karhula: Micro-CT imaging *ex vivo*
Joonas Oinas: FTIR imaging *ex vivo*

Practical exercise + report:

Practical exercise will be conducted with the FTIR imaging microscope located at the Linnanmaa campus. It includes hands-on measurements and analysis of biological samples *ex vivo*. There is a possibility to measure and analyze your own tissue samples.

Times for the practical exercise will be agreed after the first lecture.

Written final exam:

Written final exam will be organized on May 8, 2015 at 09:00 – 12:00. It will be based on the materials given from lectures, demonstrations, and practical exercise. The exam will be graded in a scale of 1-5.

Obtained credits:

Participating all the lectures:	1 ECTS
+participating all the demonstrations:	2 ECTS
+conducting the practical exercise and report:	3 ECTS
+taking the final exam	4 ECTS